INDOOR AIR QUALITY - MOLD

For the Western Colorado Regional Air Quality Collaboration

January 14, 2014





What is "Indoor Air Quality"

- "The air quality within and around buildings and structures, especially as it relates to the health and comfort of building occupants."
 - The building itself construction and materials
 - The area around buildings nature and neighbors
 - Building occupants activities and product usage

"Health and Comfort"

- These two words encompass a huge number of variables:
 - Health
 - Specific symptoms related to time spent in a building
 - SBS
 - Comfort
 - Temperature, relative humidity, lighting, noise and so on

Diagnosing IAQ Issues

- Often extremely difficult to pinpoint the problem
 - May be more than one issue
 - Resolution may be by trial and error
- May be expensive to fix
 - May not be economically feasible
- Even more difficult to change people's behavior

IAQ and "Mold"

• The issue may or may not be mold



What are Fungi?

- Molds, mushrooms, mildews, and yeasts are all classified as fungi.
- They grow best in warm, damp, and humid conditions, and reproduce and spread by making spores.
- There are thousands of species of fungi.





- Fewer than 500 fungal species have been described as human pathogens.
- Exposure to fungi can cause symptoms such as nasal stuffiness, eye irritation, wheezing, or skin irritation.

Difficulties dealing with Fungi

 Fungi are, at the same time, everywhere and nowhere.



• Fungi secrete enzymes that digest the material in which they are imbedded and absorb the released nutrients.

Sampling

- Air sampling
 - Normally not recommended
- Bulk sampling
 - EMLAP



- Who can do sampling?
 - No required training or certification

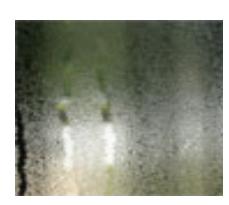
The real problem is Moisture

- Fungi need two things to grow a source of food and a source of moisture.
- What is food?
 - Most things organic
 - Wood
 - Paper/cellulose
 - Non-synthetic fabrics
 - Organic materials in dust or dirt



Eliminate the Source

- Potential sources:
 - Leaks
 - Pipes
 - Roof
 - Condensation/Temperature Differential
 - Humidity
 - Seepage

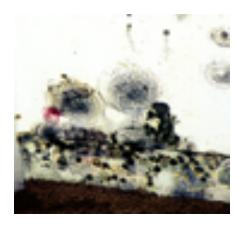




So you have a Moisture Issue...

- Building materials get wet.
- There is a window of opportunity to remove water and dry materials before fungal growth occurs.
- There may still be growth...





Dealing with Fungi

- Start the drying process, try to keep humidity in the building below 40 50%.
- Reduce the moisture in the air with dehumidifiers, fans and open windows or air conditioners, especially in hot weather. DO NOT use fans if fungal growth is present; a fan will spread the spores.

Remove Wet or Moldy Materials

- DO NOT neglect other environmental issues:
 - Asbestos
 - Lead
- Protect workers
 - OSHA Safety Information Bulletin on Mold at https://www.osha.gov/dts/shib/shib101003.html
- Isolate the area
- Ventilate
- Reduce dust

Clean

- Hard surfaces can be cleaned with soapy water and a stiff brush.
- Cleaning vs. Disinfection
 - Bleach
 - Biocide
 - Ozone
- Consider having the air ducts cleaned if you suspect mold exists on the inside surfaces.
- Upgrade and change HVAC filters frequently.

When are you done?

- The area should be:
 - Clean and free of dust and debris
 - No visible mold
 - No "musty" smell
- There are no regulatory standards for airborne fungal spore counts.
- Materials must be dry.

Dry, dry, dry....

- It may take weeks of active drying before you rebuild.
- Routinely check potential problem spots for moldy odors or signs of visible growth.
- Test for moisture not mold.



Preventing Growth

- Prevent seepage of water from outdoors into your house. Gutters needs to drain away from the house. Ground around the house needs to slope away to keep the basement and crawl space dry.
- In moisture-prone areas, choose non-organic materials with non-porous surfaces.
- Add ventilation if needed and use it.
- Reduce potential for condensation on cold surfaces by insulating.
- Be vigilant about leaks.

Resources

http://www.epa.gov/mold/





- http://www.ct.gov/dph/lib/dph/environmental_health/ eoha/pdf/fema_factsheet_cleaning_flooded_bldg.pdf
- http://www.ct.gov/dph/lib/dph/environmental_health/ eoha/pdf/fema_initialrestorationfloodbldg.pdf
- EPA's "Introduction to Mold and Mold Remediation for Environmental and Public Health Professionals"

Contact us

- CDPHE has regulations covering some of the activities we covered today such as disturbing materials that could contain lead-based paint or asbestos, but more importantly, information and guidance for someone who is performing these activities.
- 303-692-3100
- cdphe.iaq@state.co.us
- cdphe.asbestos@state.co.us
- cdphe.lead@state.co.us